Overview of U.S. ESCO Industry: Recent Trends and Historic Performance

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Overview of Presentation

- U.S. ESCO Industry Overview
  - Definition & History
  - Performance Contracting
  - U.S. ESCO Market: Size,Target Markets, and Major Industry Players
- Historic Performance of U.S. ESCOs
  - Results from NAESCO/LBNL Database Project:
    - typical costs & installed measures
    - energy savings & economics
- Enabling Policies
  - Utility DSM programs, State and Federal Legislation
- Lessons Learned

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Definition of U.S. ESCO

- Project developer in business of improving *end-use energy efficiency*:
  - Combine engineering expertise with financial services to extract untapped potential for energy efficiency at customer's facility
  - Integrates broad range of services: project identification, engineering & design, financing, construction, M&V of savings, maintenance, and billing
- Performance contracting: ESCO's compensation is tied to project's performance (e.g., amount of energy and $$ saved in customer's facility)

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ESCO Industry Roots

- Early 1980s - Firms attempt to establish energy performance contracting as viable, self-sustaining business activity
- ESCOs evolved from several sources:
  - Engineering services companies (Design/Build firms, Efficiency consultants)
  - Manufacturers of building controls/equipment
  - Growth in utility DSM rebate and bidding programs (1988-1994)
    - Start-up ESCO ventures
    - Utility subsidiaries

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U.S. ESCO Industry History

- Pre-1985: The beginning of Utility Demand-side Management
- 1985-1993: Emergence of the ESCOs
- 1994-1999: Success and Consolidation
- 2000 - Present: Adapting to Electric Restructuring and Increased Competition

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Pre-1985: Beginning of DSM

- Federal government (Pres. Carter) mandates energy conservation programs
- Some state electric regulators mandate utilities to offer energy efficiency programs
  - Residential sector mainly (audits, financing)
  - Gradually expanded to institutional and commercial customers
- Energy service companies (pre-ESCOs) provide services to utilities
  - audits,installing high-efficiency equipment, program management

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1985- 1993: Emergence of ESCOs

- Utility DSM programs grow in size and scope; linked to Integrated Resource Planning
- ESCOs develop functional capabilities in sales, engineering (comprehensive audit and design), finance and construction
- Control equipment manufacturers start ESCO business units
  - Target institutional (and industrial) customers

1994-1999: Success and Consolidation

- Number of ESCOs (control companies) build large businesses
- Federal legislation and regulations boost energy efficiency
- Utilities buy or start their own ESCOs to develop comprehensive service offerings

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2000 to Present: Adapting to Electric Restructuring and Competition

- Electricity sector restructuring
  - States experiment with retail competition
  - FERC changing wholesale markets and regulation
  - No clear national policy: much confusion
- ESCOs now compete with new entrants (companies) to sell:
  - Energy efficiency technologies
  - Small-scale, onsite, electric generation
  - Load management
  - Electric and gas Commodity
  - End use services (Chilled water, steam)
  - Other services (e.g., building maintenance and operations)

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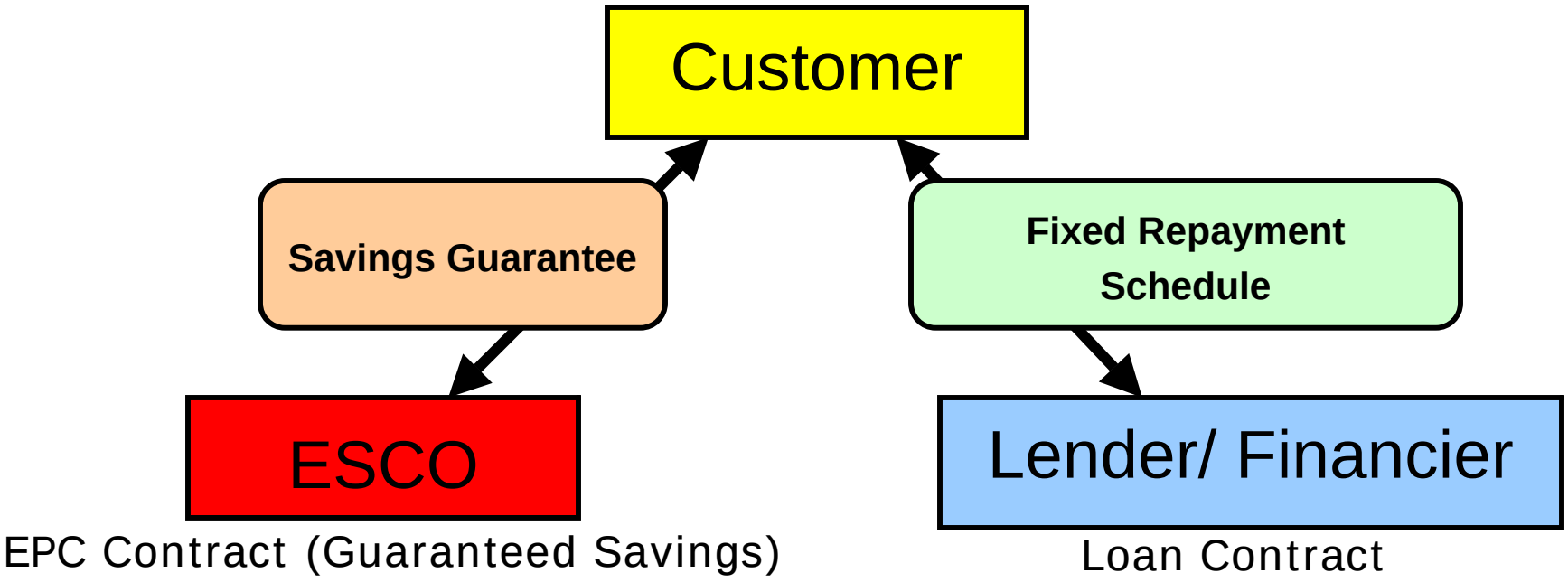
Performance Contract: Guaranteed Savings



- Customer finances project & assumes “debt obligation” on balance sheet
- ESCO assumes “project performance risk” & guarantees that savings will be sufficient to cover customer’s annual debt obligation
- Lender assumes “credit risk”

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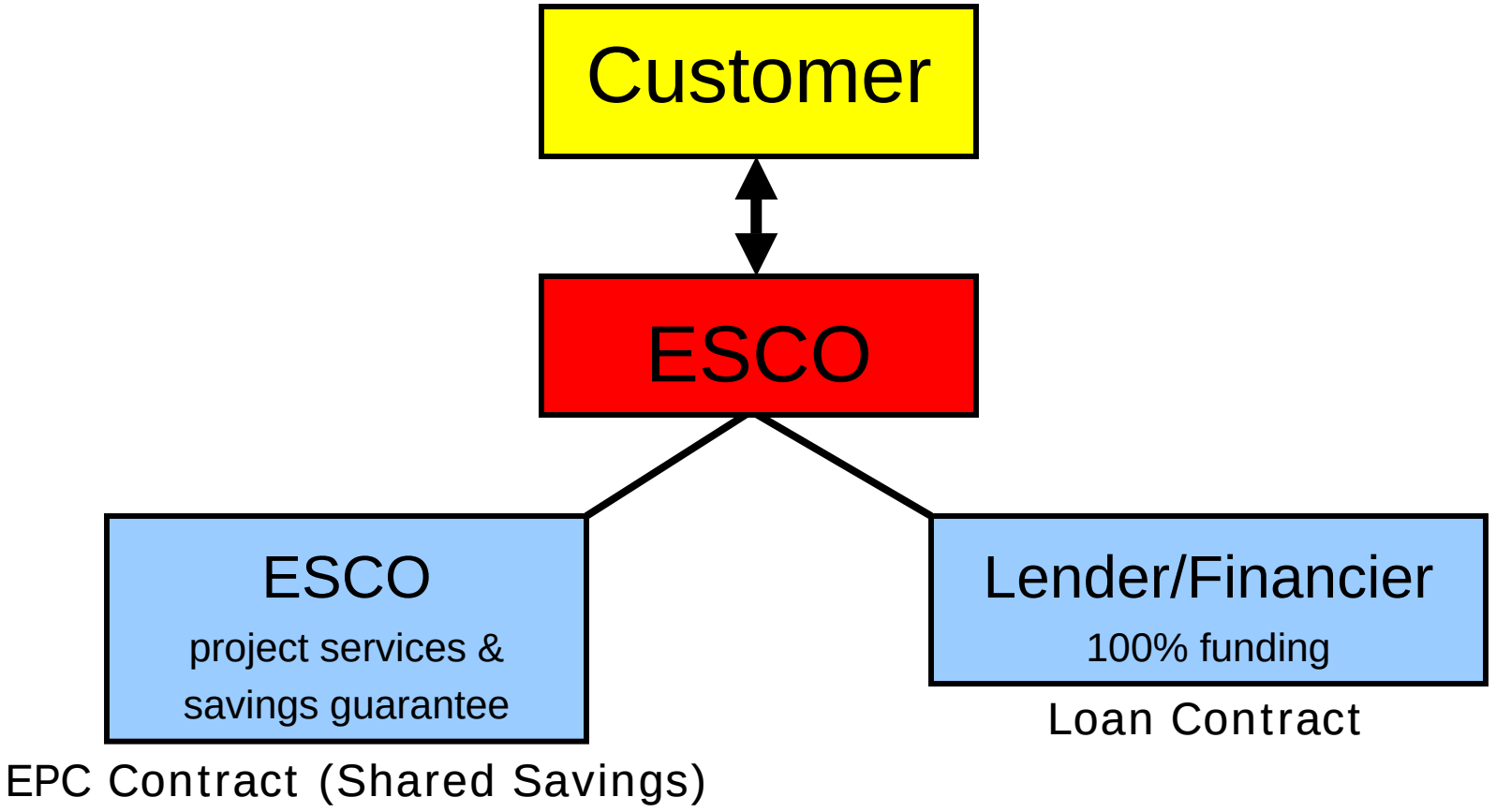
Performance Contract: Shared Savings



- ESCO assumes performance and credit risk

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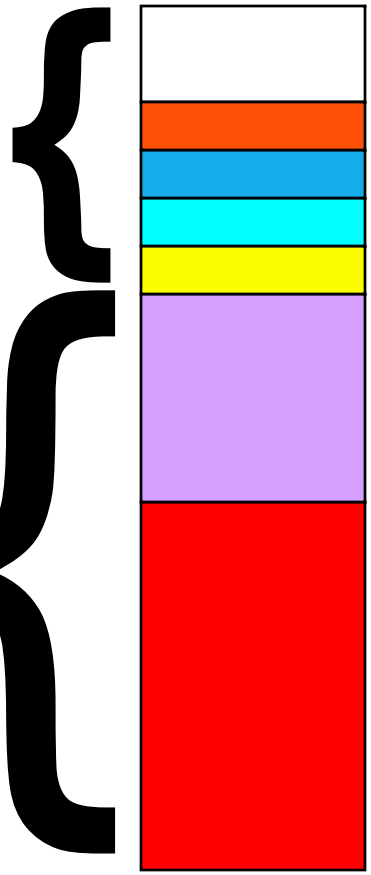
Costs Associated with ESCO Projects

Transaction Costs

20 to 40%

Project Costs

60 to 80%



Prospecting/Proposal Generation

Project Identification

Measurement & Verification

Funding Premium (Third Party)

Closing Fees (Legal)

Design

Capital Equipment & Installation

Source: Easton Consultants

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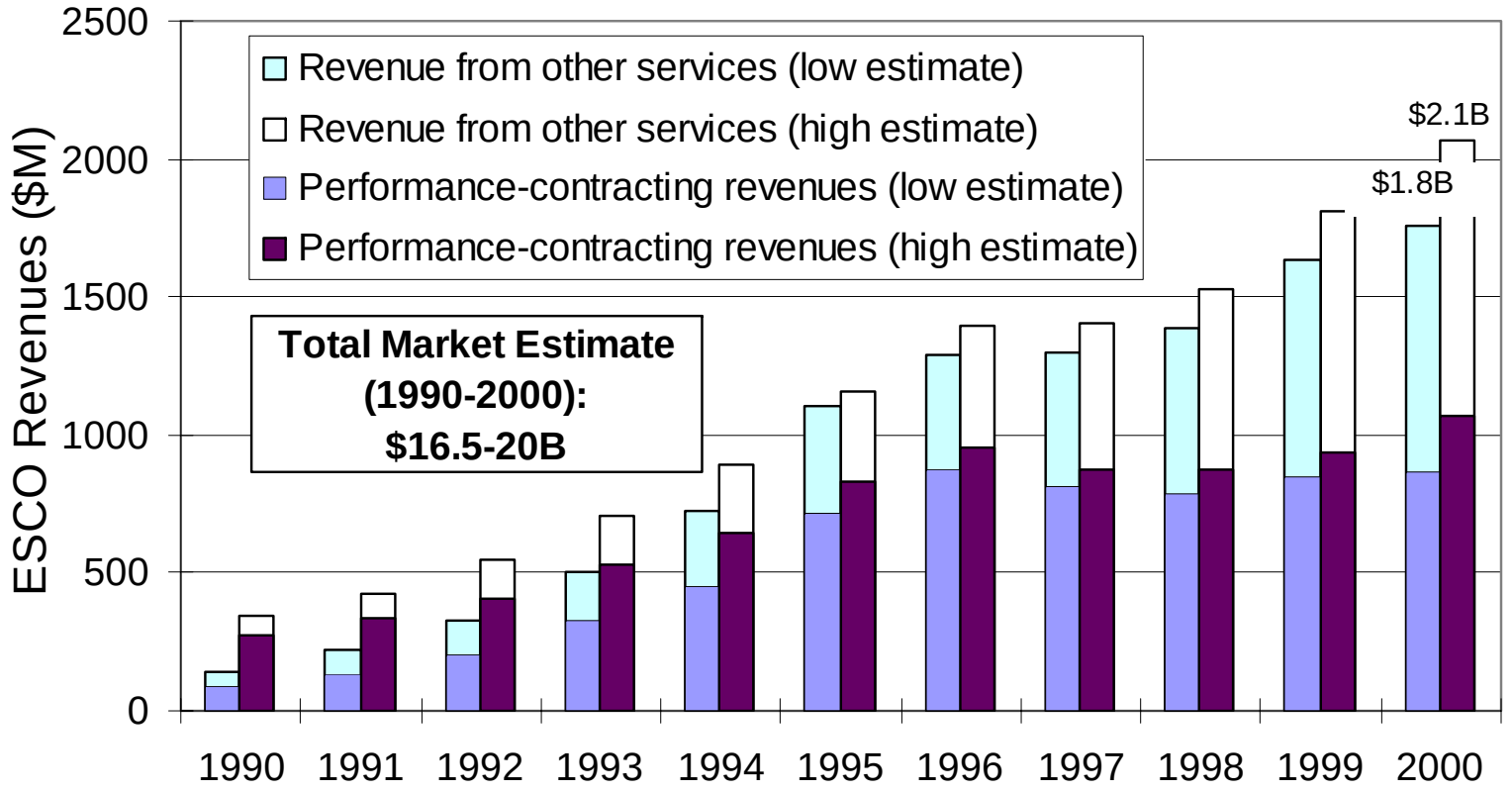
ESCO Industry has experienced strong growth



- ESCO Market for energy-efficiency related services is ~$1.8-$2.1B in 2000; 24% annual growth rate (1990-2000)
- Performance contract revenues: $0.9-$1.0B in 2000

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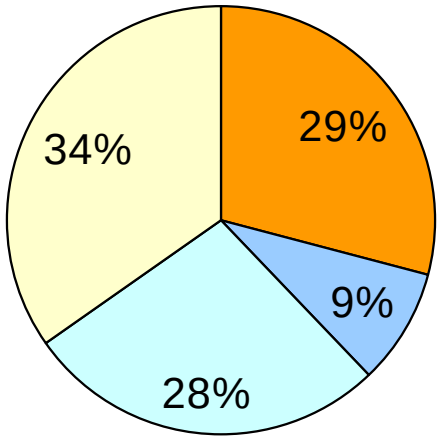
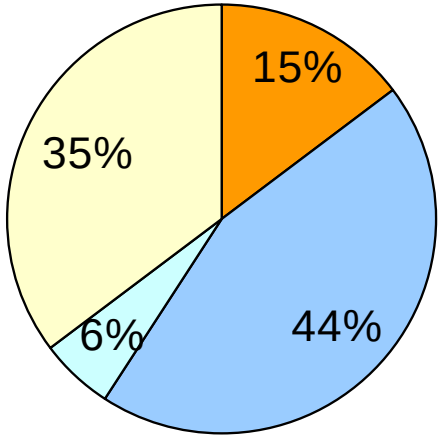
ESCO Industry Ownership Structure

Industry Ownership in 2000...



…based on revenues



…based on number of companies

- Quickly changing industry -- mergers and acquisitions very common;
- Expect significant consolidation: fallout from CA, Enron and stalled retail market
- About 12 companies consistently comprise ~70% of industry revenues

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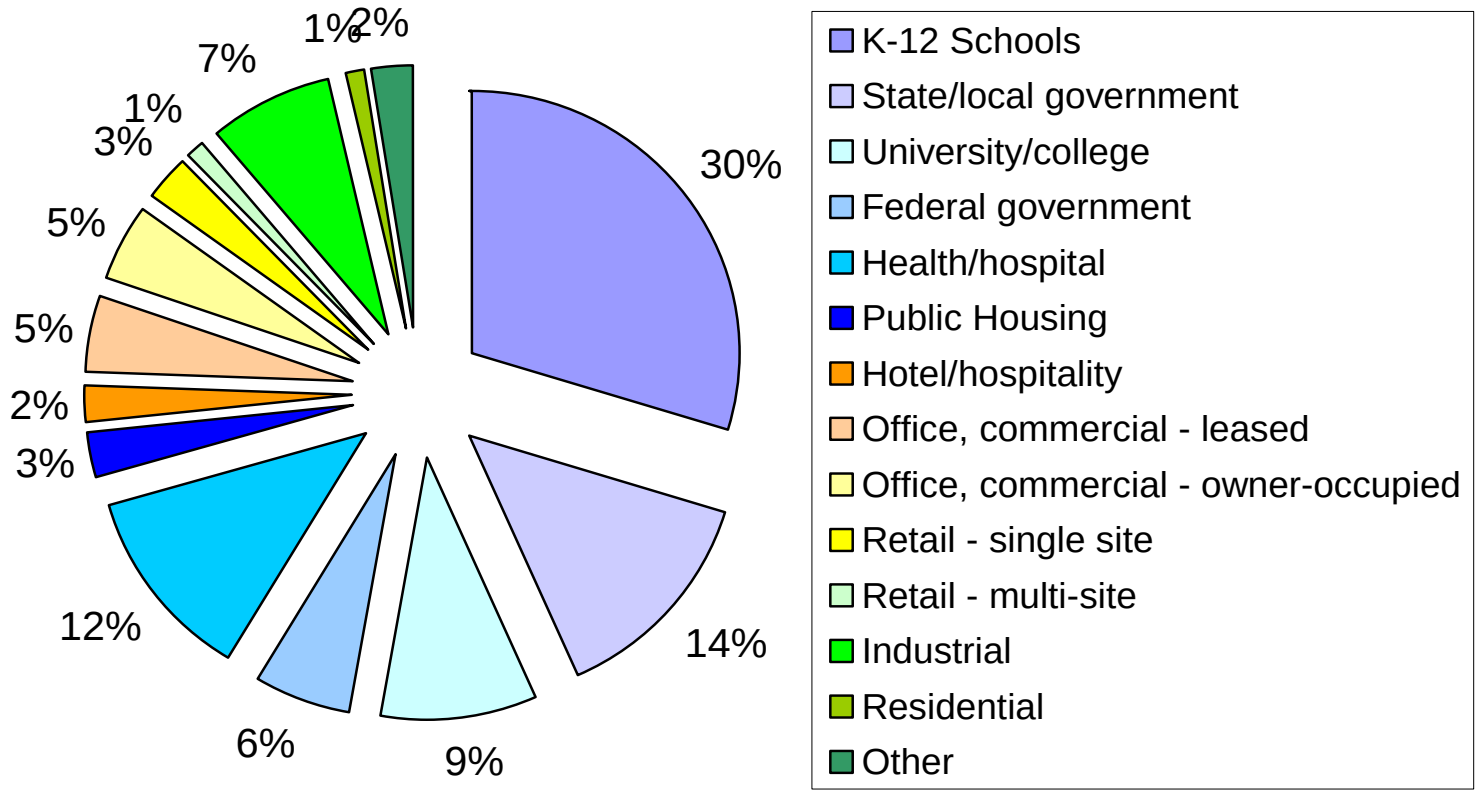
ESCO Target Markets: Historic Activity



- Results from NAESCO Database project: 1473 projects representing $2.3 Billion in investment
- Institutional sector (schools, government, health/hospital) represent ~74% of market activity

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ESCO Industry: Key Players

- Equipment & controls manufacturers with ESCO operations
- Utility-owned ESCOs
- “Independent” ESCOs - small to mid-size performance contractors
- Retail energy suppliers
  - Potential competitors to traditional ESCOs for some products (e.g, onsite generation, central energy plants for chilled water or steam)

Equipment & Controls Manufacturers with ESCO Operations

- Business strategy involves broadening market for equipment and services of core business
- Major new entrants (e.g., Siemens) but some existing companies shifting focus (e.g., Honeywell)
- Strategic alliances with Retail Energy Service Companies were not very successful
- Renewed focus on energy & facility management services
  - facility management
  - Onsite energy manager
  - Act as customer's energy advisor – strategic energy planning, rate negotiation, energy information services

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Utility-owned ESCOs

- Many utilities bought or started ESCOs as part of strategic response to Electricity Restructuring (~1995-1999)
  - offer energy efficiency, onsite generation,
  - Some ESCOs also provide electricity commodity and risk management services
  - targeted customers in local service territory and/or Federal market with limited success (“brand recognition”)
- Current situation
  - Retail competition stalled in U.S.
  - Some utility-owned ESCOs have grown, but many smaller ESCOs have gone out of business or been sold
  - Some utilities selling off ESCOs because of financial troubles because of losses in trading operations and/or merchant generation

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Historic Performance of U.S. ESCOs: Results from NAESCO Database Project

- Typical Project Costs, Installed Measures, Savings, and Payback Times
- Trends in Contracting Approaches

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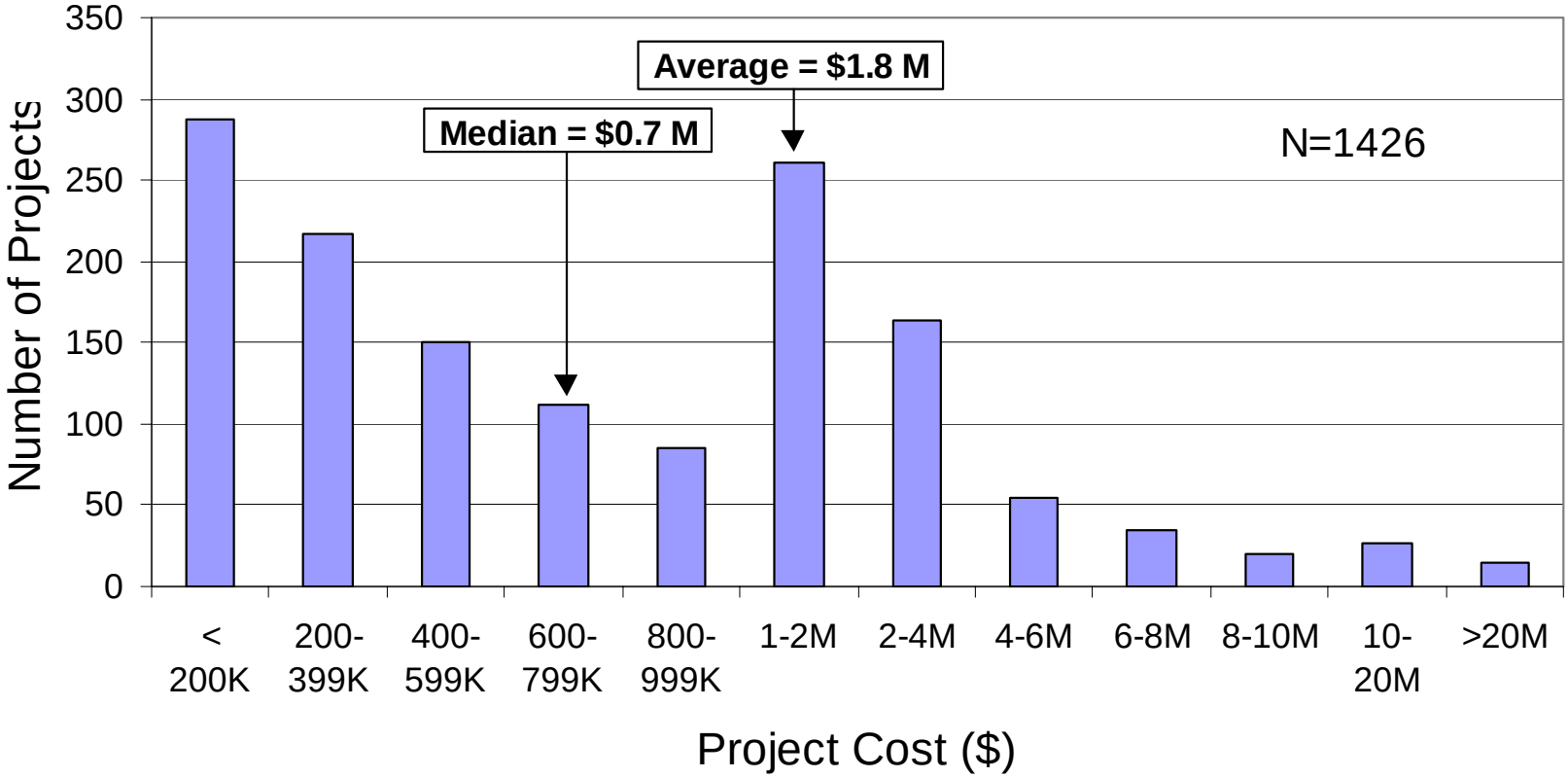
Cost of U.S. ESCO Projects: Investment Trends



- $2.55B of work completed by 51 companies
- Significant activity in four states (44% in NY, NJ, CA, TX)
- Median and average project costs: $0.7M and $1.8M, respectively

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Project Cost by Market Segment

Market Segment	No. of Projects (N=1410)	Project Cost ($M)		
		25th percentile	median	75th percentile
K-12 Schools	406	0.5	1.2	2.4
State/local government	194	0.2	0.7	1.7
University/college	132	0.5	1.5	2.9
Federal government	83	0.5	0.9	1.8
Health/hospital	172	0.2	0.5	1.1
Public Housing	39	1.0	1.8	6.0
Private Sector	384	0.1	0.3	0.8

- Median project costs are higher in public/institutional markets compared to private sector ($0.9M vs. $0.3M)
- Typical projects are larger in Universities ($1.5M) and Public Housing ($1.8M)

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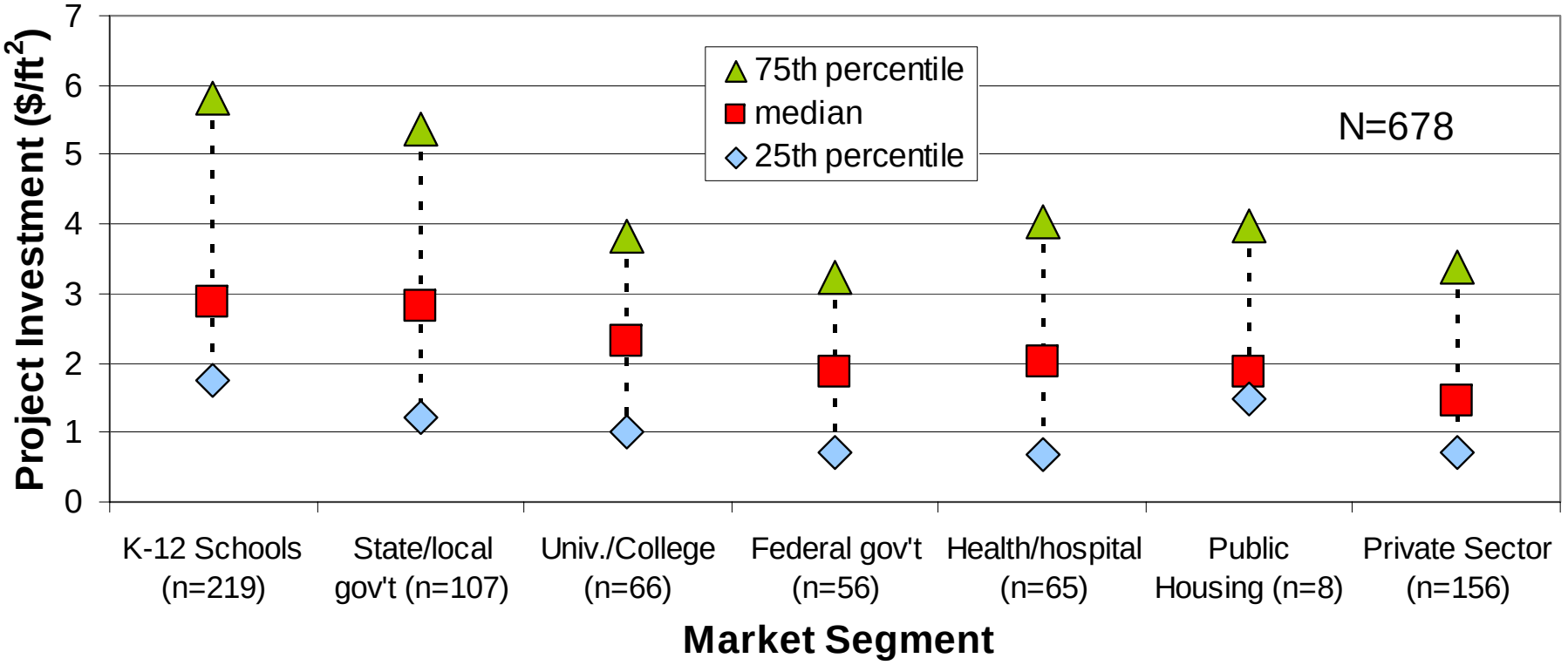
Project Investment Trends by Market Segment



- Median project investment levels are 1.8 times greater in institutional than private sector projects ($2.50 vs. $1.40/ft^2)

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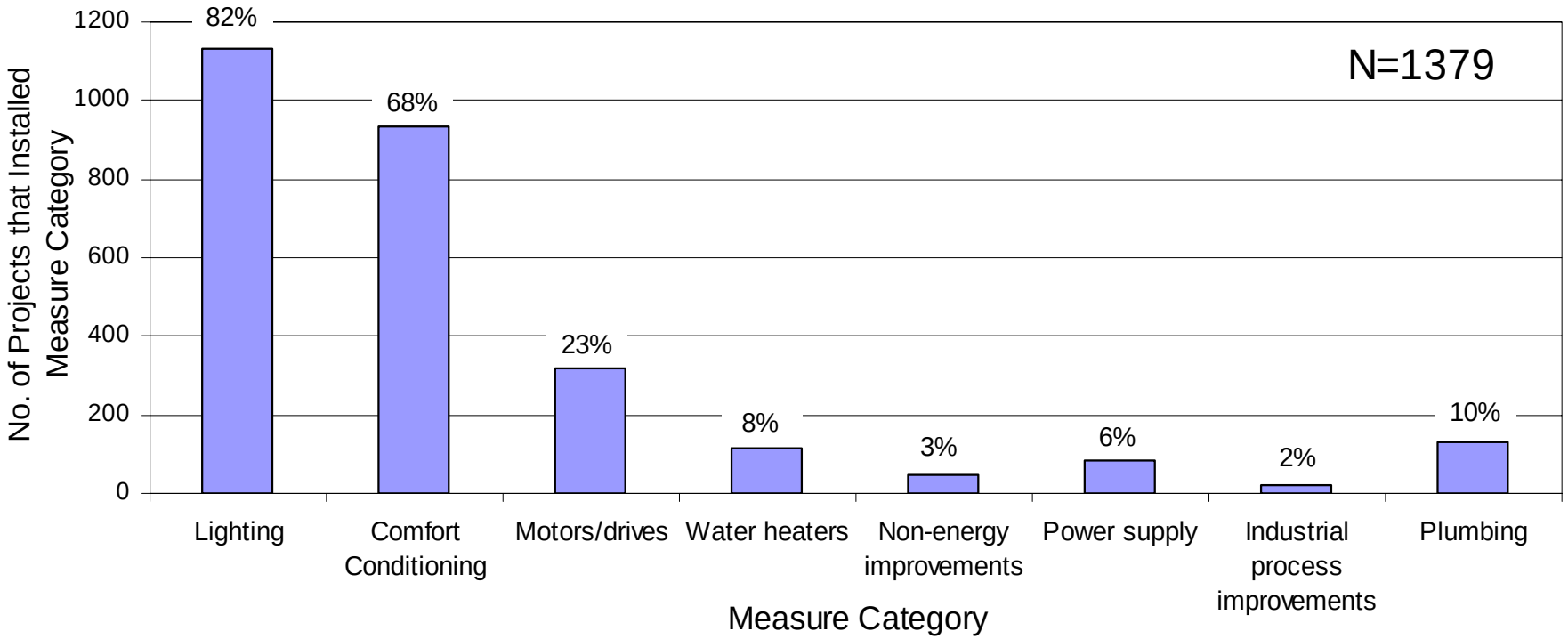
Frequency of Installed Measures



- Typical ESCO project consists of multiple measures and strategies
- High-efficiency lighting installed in over 80% of projects
- HVAC equipment (boilers, chillers, cooling towers, air handling units), energy management systems, or controls installed in 68% of projects

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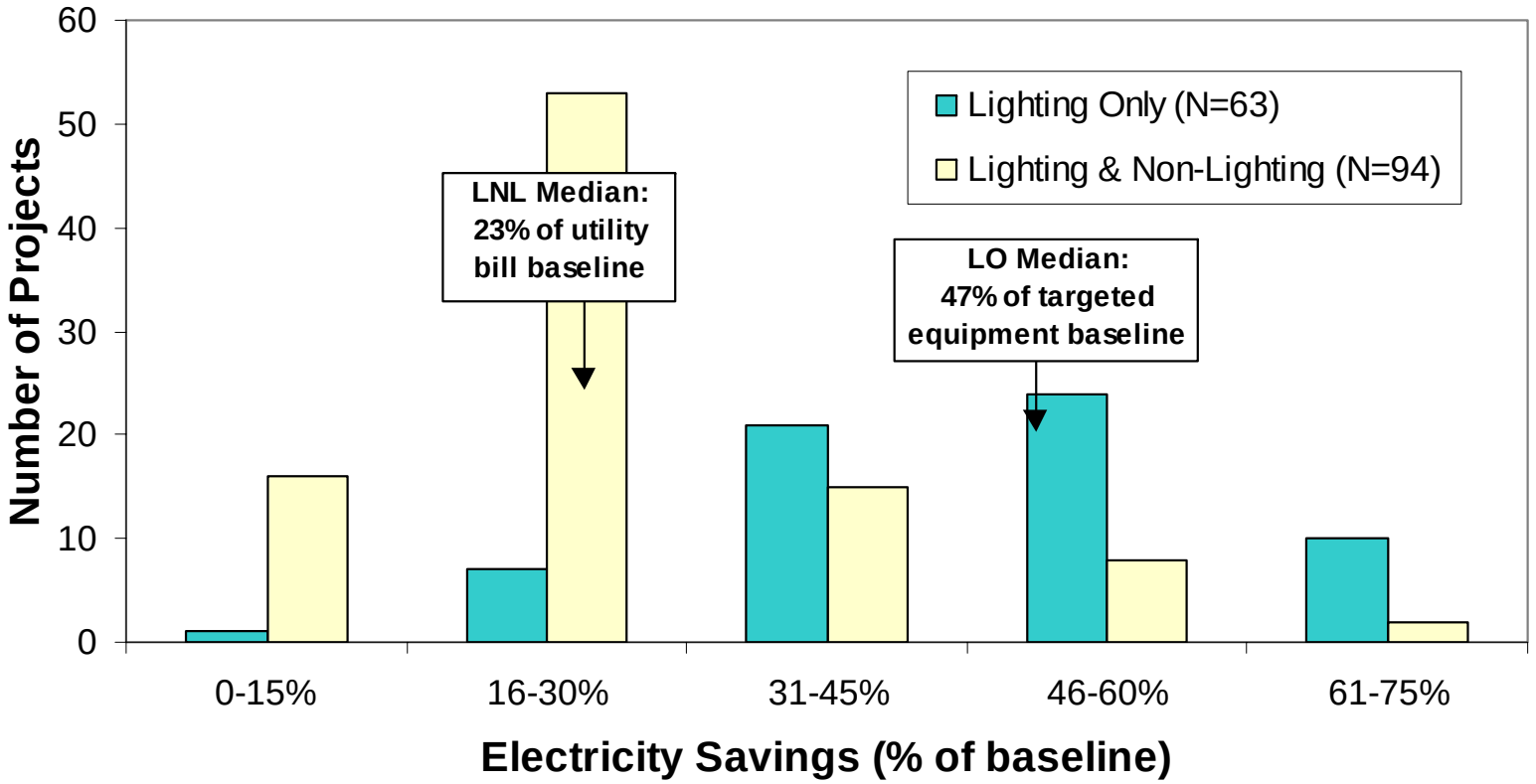
Project Savings obtained from Energy Efficiency Measures



- Lighting-Only projects saved 47% of equipment targeted electricity
- Projects with Lighting & Non-lighting measures typically saved 23% of electric utility bill consumption

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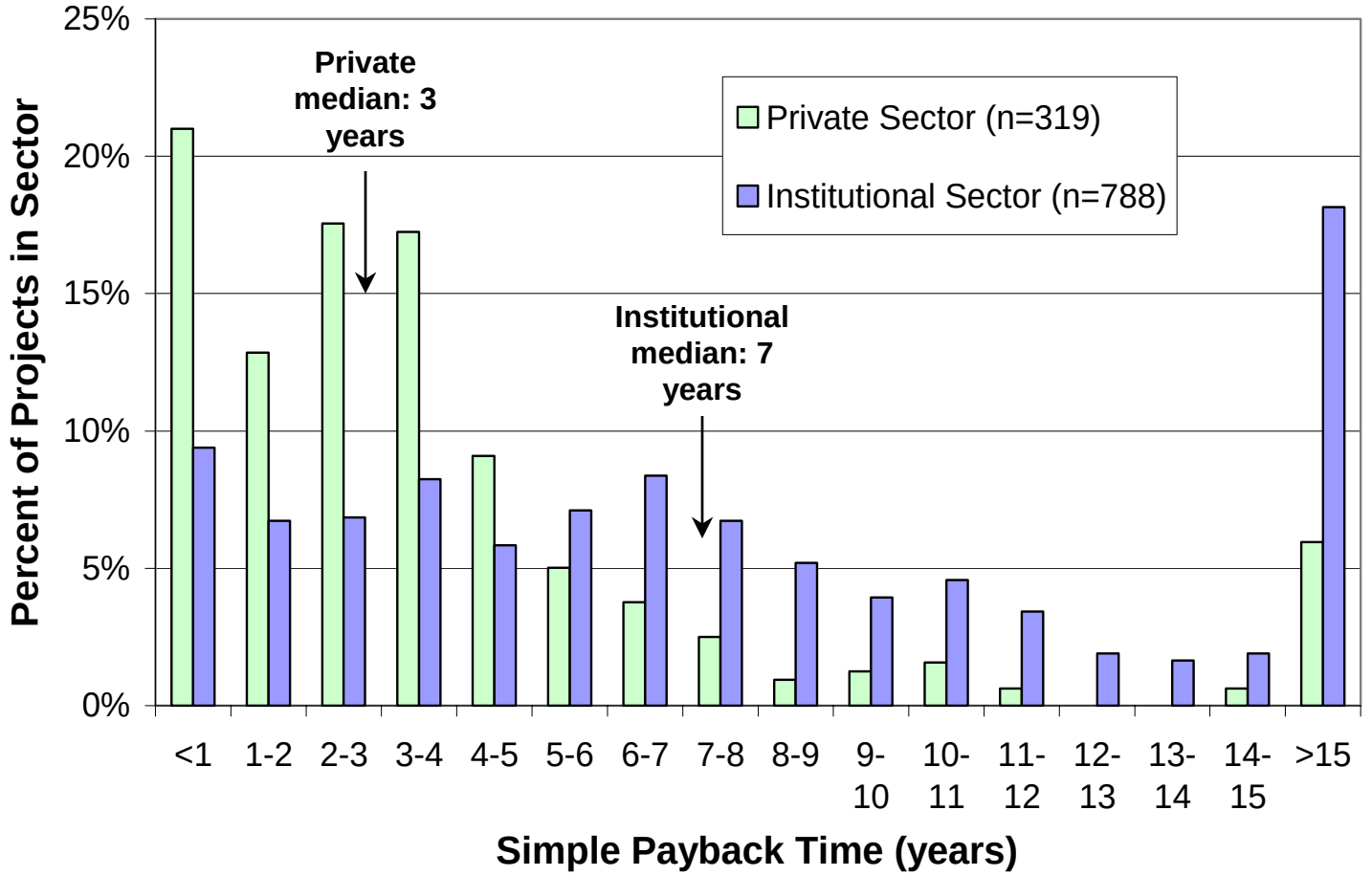
Economic Payback of ESCO Projects to Customers



- 83% of Private Sector projects pay back in 6 years or less vs. 44% of Institutional sector projects

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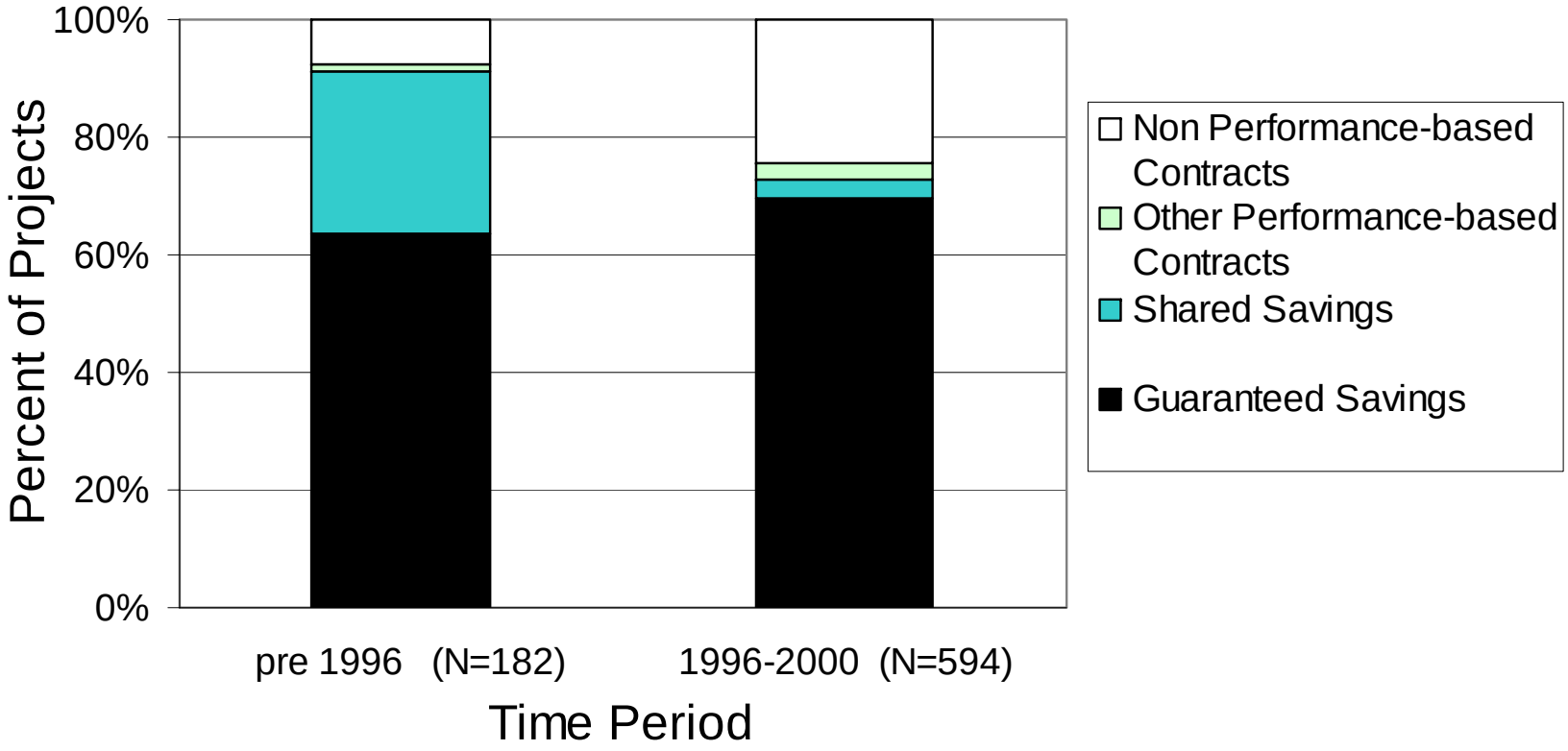
Performance Contracting is a Decreasing Share of ESCO Business



- Market share of performance contracting is decreasing among NAESCO members (92% to 76%)
- Design/Build & Fee-for Service approaches account for ~30% of ESCO projects in 1996-2000

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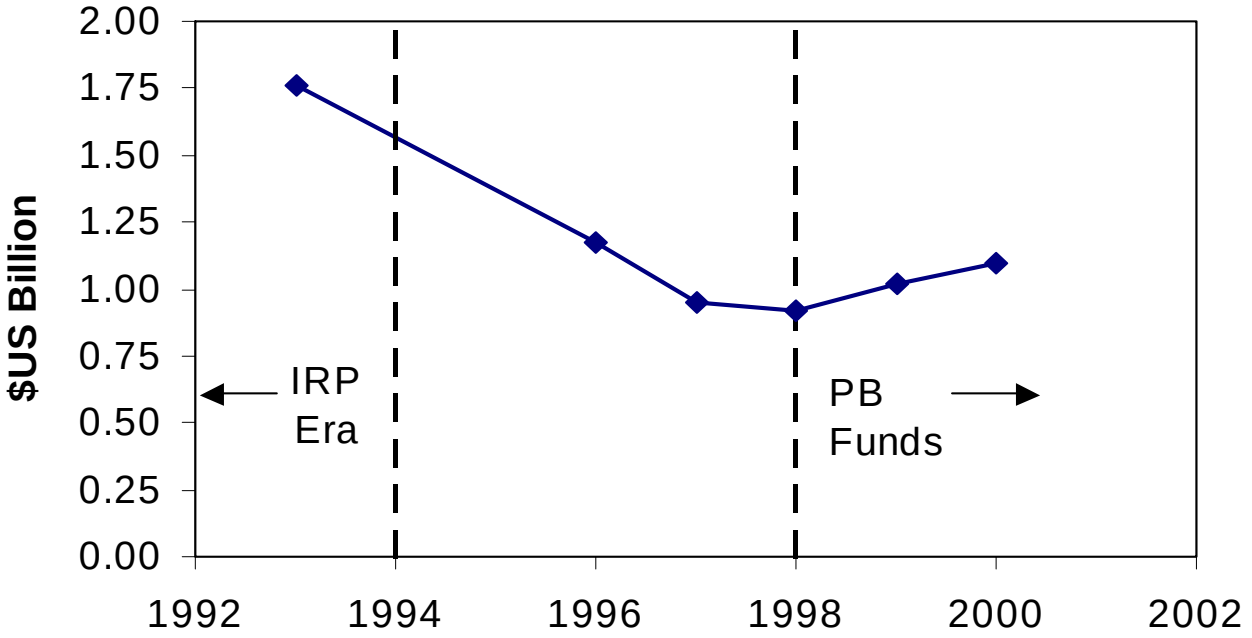
Role of Enabling Policies

- Utility DSM programs
- State regulations for performance contracting
- Federal Energy Policy Act

U.S. Electric Utilities have invested in Energy Efficiency



Source of Data: York, Dan and Marty Kushler (2002), "State Scorecard on Utility and Public Benefits Energy Efficiency Programs: An Update," ACEEE Report Number U023.

- Utilities offer Energy Efficiency (EE) programs that provide financial incentives, technical assistance and information to customers
- Programs paid by utility ratepayers or by public benefit funds

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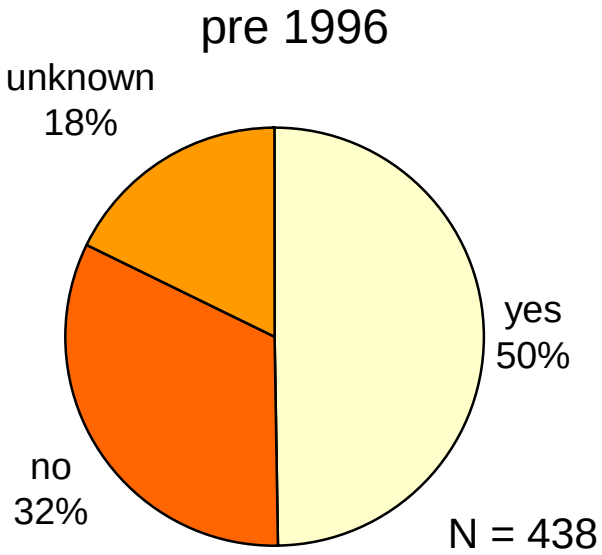
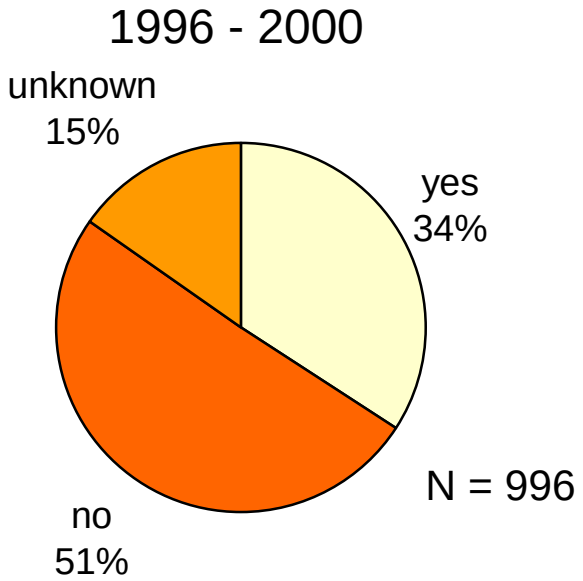
ESCO Reliance on DSM Programs May Be Declining





- 38% of all projects participated in utility DSM program
- Participation has decreased since 1995 (50% vs. 34%)

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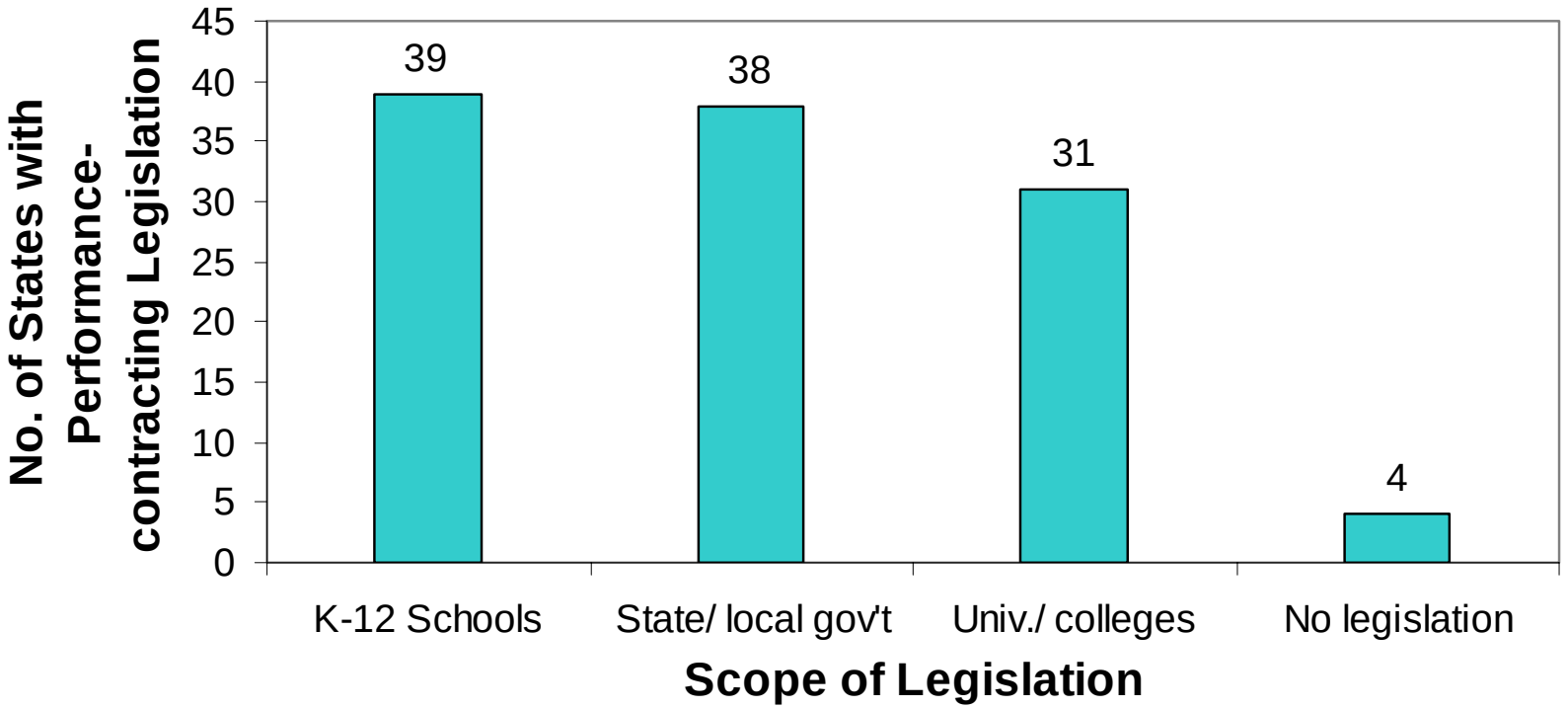
Many U.S. States encourage Performance Contracting



- States adopt laws/procurement guidelines that remove barriers to performance contracting for K-12 schools, universities and state/local governments
- 46 states have legislation for at least one of these sectors
- State energy offices also promote performance contracting; educate customers on working with ESCOs

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U.S. Government promotes energy efficiency in Federal buildings

- Executive Orders (EO) signed by President
  - Directs Federal Agencies to reduce building energy consumption through installing cost-effective energy efficiency
  - Goals: 30% reduction by 2005, 35% by 2010
- Energy savings performance contracts (ESPCs)
  - Authorized in 1986 and 1992 as innovative contracting mechanisms to finance and implement EE improvements
  - Indefinite-delivery, indefinite-quantity (IDIQ) contracts streamline procurement
  - ESCOs are pre-qualified for Federal agency programs
  - $1.2 Billion in ESPC projects since 1988
- Federal Energy Management Program (FEMP)
  - Champions energy efficiency among federal agencies
  - Developed and implements DOE Super-ESPC program

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Lessons Learned

- U.S. ESCO industry has been very successful in institutional markets
  - private (e.g., industrial) sector has been more difficult
- Government policy support and market development programs were critical to success:
  - Getting energy prices right is not enough
  - State and Federal legislation facilitating performance contracting
  - Modifying government procurement practices (“best value” vs. low bid)
  - Public facilities energy efficiency program
  - Utility DSM programs
  - Customer education/information

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Lessons Learned (cont.)

- Prerequisites for a successful ESCO industry
  - Well-established contract law
  - Access to local financing: need reasonable interest rates and contract terms
  - Good relationships with customers

- Bottom line – each country is unique
  - different business, legal and financing practices and varying technical opportunities mean the ESCO model will have to be adapted